

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Application Review

Issue Date: TBD

Region: Mooresville Regional Office
County: Catawba
NC Facility ID: 1800589
Inspector's Name: Jim Vanwormer
Date of Last Inspection: 04/15/2020
Compliance Code: C / Compliance - procedural requirements

Facility Data				Permit Applicability (this application only)			
Applicant (Facility's Name): Hickory Springs Manufacturing Company - PTI				SIP: 15A NCAC 02D: .0515, .0521, 1806			
Facility Address: Hickory Springs Manufacturing Company - PTI 1500 13th Street SW Hickory, NC 28602				NSPS: n/a NESHAP: n/a PSD: n/a			
SIC: 3086 / Plastics Foam Products NAICS: 32615 / Urethane and Other Foam Product (except Polystyrene) Manufacturing				PSD Avoidance: 15A NCAC 02Q .0317 (VOC) NC Toxics: 15A NCAC 02Q .0711 112(r): 15A NCAC 02D .2100 Other: n/a			
Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V							
Contact Data				Application Data			
Facility Contact		Authorized Contact		Technical Contact			
Zenaida Camacho EHS Specialist (828) 324-2213 235 2nd Avenue, NW Hickory, NC 28603		Michael Simmons President - Diversified Products (828) 328-2201 PO Box 128 Hickory, NC 28603		Zenaida Camacho EHS Specialist (828) 324-2213 235 2nd Avenue, NW Hickory, NC 28603		Application Number: 1800589.20A Date Received: 09/22/2020 Application Type: Modification Application Schedule: TV-1st Time Existing Permit Data Existing Permit Number: 10621/R00 Existing Permit Issue Date: 09/24/2019 Existing Permit Expiration Date: 08/31/2027	
Total Actual emissions in TONS/YEAR:							
CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2019	---	---	5.84	---	---	---	--- [---]
Review Engineer: Russell Braswell Review Engineer's Signature: _____ Date: _____				Comments / Recommendations: Issue 10621/T01 Permit Issue Date: TBD Permit Expiration Date: TBD+5 years			

1. Purpose of Application:

Hickory Springs Manufacturing Company - PTI ("HSM"; "the facility") currently operates a factory in Hickory, NC under Air Quality Permit 10621R00. The facility is classified as Title V. The existing permit includes a specific condition that requires HSM to submit a Title V permit application within 12 months of commencing operation of the facility. HSM has submitted this permit application in order to comply with that specific condition.

This permit application indicates that no changes have been made to the facility in terms of equipment or method of operation.

2. Facility and Process Description:

Most of the equipment and operations at this facility were originally located at a facility in Conover, NC.¹ They have been moved to this newer, larger location.

The facility produces extruded polyethylene ("EPE") in various shapes and sizes and will eventually operate between 2,000 and 4,000 hours per year. Operations at the facility will include:

- Nine extrusion lines;
- Ten inkjet printers; and
- One isobutane storage tank (insignificant).

According to the Form B included in the application:

"The polyethylene foam extrusion process utilizes polyethylene pellets and isobutane as raw materials. The pellets are melted and co-fed with isobutane under pressure to a heated extruder head, where the mixture is forced through a shaped die. Upon exiting the die head, the isobutane vaporizes causing the molten polyethylene to expand and take on a shape formed by the die."

The only pollutant emitted from the foam extrusion process is isobutane, which is a volatile organic compound ("VOC"). Most of the isobutane used during the EPE process is emitted from the facility, although some may be permanently retained within the product. When calculating facility-wide actual emissions of VOC, HSM has historically set actual VOC emissions equal to isobutane use. However, it should be noted that compliance with the PSD Avoidance limit uses a different calculation method. See Section 4.e for the PSD Avoidance calculation and Section 5 for facility-wide emission calculations.

This facility will also operate inkjet printers used to mark the finished EPE products. The VOC and small amount of methyl ethyl ketone solvent in the inks will be the only emissions from this process.

3. Application Chronology:

- September 22, 2020 Application .20A received in Raleigh Central Office.
- October 21, 2020 An initial draft of the Title V permit and application review were sent to DAQ staff (Mark Cuilla, Tom Anderson, Samir Parekh, Jennifer Womick, Jim

¹ Title V Air Quality Permit 04271T24, facility ID No. 1800107.

VanWormer, Bruce Ingle) and HSM staff (Zenaida Camacho, Michael Simmons). For a summary of comments received, see Attachment 1.

- XXXX Public Notice / EPA Review
- XXXX Permit issued.

4. Regulatory Overview:

HSM is subject to the following State Implementation Plan and Federal regulations, in addition to the requirements in the General Conditions:

- 15A NCAC 02D .0515 "Particulates from Miscellaneous Industrial Processes"
- 15A NCAC 02D .0521 "Control of Visible Emissions"
- 15A NCAC 02D .1806 "Control and Prohibition of Odorous Emissions" (State-enforceable Only)
- 15A NCAC 02D .2100 "Risk Management Plan"
- 15A NCAC 02Q .0317 "Avoidance Conditions" (PSD Avoidance)
- 15A NCAC 02Q .0711 "Emission Rates Requiring a Permit" (State-enforceable Only)

a. 15A NCAC 02D .0515 "Particulates from Miscellaneous Industrial Processes"

This rule applies to sources not subject to a specific particulate emission limit under 02D .0500. The rule limits particulate emissions from emission sources based on the following equations:

$$\begin{array}{ll} \text{for } P \leq 30: & E = 4.10 \times P^{0.67} \\ \text{for } P > 30: & E = 55.0 \times P^{0.11} - 40 \end{array}$$

Where:

E = allowable emission rate in pounds per hour, and
P = process weight in tons per hour

The EPE processes and inkjet printers are not expected to emit any particulate emissions. Therefore, they will comply with this rule by default. No specific monitoring, recordkeeping, or reporting is required.

b. 15A NCAC 02D .0521 "Control of Visible Emissions"

This rule applies to sources not subject to a specific visible emissions limit under 02D .0500. In general, the rule limits visible emissions to less than 20% opacity.

The EPE processes and inkjet printers are not expected to emit any visible emissions. Therefore, they will comply with this rule by default. No specific monitoring, recordkeeping, or reporting is required.

c. 15A NCAC 02D .1806 "Control and Prohibition of Odorous Emissions" (State-enforceable Only)

This is a State-enforceable rule that requires facilities not cause objectionable odors outside of the facility's boundary. In general, DAQ requires facilities that have caused substantiated odor complaints to implement some kind of control for odorous emissions.

Based on the most recent inspection report, HSM appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections.

d. 15A NCAC 02D .2100 "Risk Management Plan"

This rule requires that any facility subject to increased requirements under Section 112(r) of the Clean Air Act comply with those requirements and submit a Risk Management Plan as required by 40 CFR Part 68.

The proposed facility will store isobutane on-site in quantities greater than 10,000 pounds. Therefore, the facility is required to develop, submit, and maintain a Risk Management Plan.

Based on the most recent inspection report, HSM appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and submittals of the Risk Management Plan.

e. 15A NCAC 02Q .0317 "Avoidance Conditions" (PSD Avoidance)

The requirements of Prevention of Significant Deterioration ("PSD") apply to each facility that meets the definition of "major source" under the rule. For facilities not included in the list of named source categories under 40 CFR 51.166(b)(1)(i)(a), a major source is a facility with potential emissions of any pollutant greater than 250 tons per year. This facility is not included in a named category, so 250 tons per year is the threshold. This facility has potential emissions of VOC greater than 250 tons per year, so PSD requirements could apply.

A facility may avoid the applicability of PSD by agreeing to an enforceable emission limit less than the applicable major source threshold. HSM has therefore requested a facility-wide emission limit of 250 tons per year of VOC and thereby will avoid the requirements of PSD.

According to §51.166(b)(1)(iii), "fugitive emissions" are not to be included in determining applicability to PSD, provided they are emitted from a facility not included in one of the named source categories. As mentioned above, this facility is not included in a named category, and therefore fugitive emissions will not be considered regarding its PSD applicability.

According to §51.166(b)(20), "fugitive emissions" means those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening. Historically, when determining "could not reasonably pass through", EPA has considered technical feasibility, cost, and the operations of other similar facilities.

When HSM was operating at the former location in Conover, HSM performed emission testing (test reference number 2014-254ST) demonstrating that a large amount of the blowing agent (isobutane, a VOC) is emitted in a manner that would qualify as fugitive. When HSM submitted the first permit application for this new facility (application 1800589.19A), HSM requested that DAQ use the existing emission test data for this new facility.

In addition to the test data, HSM submitted a cost analysis of constructing fume hoods and a control device at the new facility. In the application, HSM argues that the cost of capture and control of most of the VOC emissions is not reasonable, and therefore those emissions should be considered fugitive. HSM's analysis only considered fume hoods located at the extrusion head, and additional fume hoods further down the extrusion line. Extraction on building vents and a permanent total enclosure were not

considered in the application. It should be noted that there are other polyethylene foam extrusion facilities operating in North Carolina that use some form of capture and control for VOC emissions.²

DAQ's Stationary Source Compliance Branch ("SSCB") and the Mooresville Regional Office ("MRO") have previously objected to the test results given in the emission test.³ HSM did not obtain prior approval of the test protocol from SSCB, personnel from MRO were not given the opportunity to observe the test while it was in progress, and MRO suggested that the test methodology was insufficient to establish proper emission factors. Although the emission test data was ultimately integrated into the Title V permit for the Conover facility, DAQ will not allow its use in a permit for a new facility given the objections to the existing test results, and the determination of fugitive emissions will change based on the design of the new building.

Therefore, HSM will be required to perform emission testing at the new facility in order to determine the portion of VOC emissions that are retained in the product (if any) and the portion of VOC emissions that are emitted in a manner that qualifies as "fugitive" (if any). HSM will work with SSCB to determine acceptable testing methods to determine the amount of retained and fugitive VOC.

Fugitive emissions will not be counted against the PSD avoidance limit but will still be counted for the annual emission inventory. VOC that is retained in the product will not be counted against the PSD avoidance limit and will not be included in the emission inventory.

HSM will calculate facility-wide VOC emissions comparable to the PSD avoidance limit using the following formulas:

$$E_{VOC} = (Q - R - F) + (I) + (M)$$

$$R = \sum [P_n \times EF_{R,n}]$$

$$F = \sum [P_n \times EF_{F,n}]$$

Where:

E_{VOC}	=	Monthly emissions of VOC comparable to the PSD Avoidance limit.
Q	=	The amount of isobutane blowing agent used per month.
R	=	The amount of isobutane retained in extruded foam products.
F	=	The amount of isobutane emitted in ways that qualify as "fugitive" under 40 CFR 70.2 and 40 CFR 51.166(b)(20).
I	=	The amount of VOC emitted from the inkjet printers (ID Nos. ES-PR1 through ES-PR10). Calculated by multiplying the VOC content of each ink used by the amount of each ink used in that month.
M	=	The amount of miscellaneous VOC emissions not otherwise accounted for. The Permittee shall use emission factors obtained from AP-42 where relevant, or another method approved by DAQ.
P_n	=	The amount of product in product family n produced per month

² For example, see the air quality permits issued to Pregis Innovative Packaging Inc. – Granite Falls (Air Quality Permit 06552T10; Facility ID No. 1400139) and Sealed Air Corporation – Hudson (Air Quality Permit 07550R08; Facility ID No. 1400166).

³ See memo dated December 15, 2014 from Michael Pjetraj, SSCB supervisor to Gautam Patnaik, permit engineer.

- $EF_{R,n}$ = The portion of isobutane blowing agent retained in the product for each product family n . To be determined with future testing.
- $EF_{F,n}$ = The portion of isobutane blowing agent emitted in ways that qualify as "fugitive" when producing products in product family n . To be determined with future testing.

In order to demonstrate compliance, HSM will perform the above calculation on a monthly basis and compare the rolling 12-month total VOC emissions against the 250 ton/yr limit. HSM will keep records of calculations and report the results twice per year.

The existing permit requires HSM to perform emission testing within 180 days of the startup of the facility. HSM has requested an extension of the testing deadline, and SSCB has extended the due date to December 31, 2020. This new date will be included in the permit, as well as a condition that allows to DAQ to approve another due date without updating the permit.

In addition, HSM will be required to submit a permit application in order to incorporate the results of the emission testing into the permit. This application will be processed as an administrative amendment.

Compliance with this rule will be determined with subsequent reports and when the required testing is completed.

f. 15A NCAC 02Q .0711 "Emission Rates Requiring a Permit"
(State-enforceable Only)

This rule requires that facilities that would emit a toxic air pollutant ("TAP") at a rate greater than specified in 02Q .0711 must perform air dispersion modeling to ensure compliance with acceptable ambient limits listed in 02D .1104.

The only TAP that will be emitted from the new facility is methyl ethyl ketone ("MEK"). The threshold emission rates are 78 pounds per day and 22.4 pounds per hour. Based on the emission inventories for the Conover facility, HSM is not expected to exceed these emission rates.

The permit will note that MEK is emitted from this facility, but no additional recordkeeping or reporting will be required in order to demonstrate compliance. Compliance can be determined based on the annual emission inventory.

g. Non-applicable rules

1. 15A NCAC 02D .0614 "Compliance Assurance Monitoring" (and 40 CFR Part 64)

This rule applies to control devices that control sources with potential emissions greater than their respective major source threshold. This facility does not use control devices, so this rule does not apply.

2. 15A NCAC 02D .0900 "Volatile Organic Compounds" (a.k.a. "RACT")

These rules apply to facilities located in areas designated as nonattainment for ozone. Cleveland County is not one such area, and therefore, these rules do not apply.

3. 15A NCAC 02D .1100 "Control of Toxic Air Pollutants"

This rule only applies to facilities that emit TAPs such that air dispersion modeling is required to demonstrate compliance with the acceptable ambient limits listed in 02D .1104. This facility is not expected to emit TAPs at such levels, so this rule does not apply.

4. 15A NCAC 02D .1111 "Maximum Achievable Control Technology"

This rule only incorporates the Federal rules found in 40 CFR Part 63 (a.k.a. "MACT", "NESHAP"). MACT rules apply based on the classification of a facility ("major source" vs "area source") and the type of activities at the facility. Because this facility is not expected to emit any hazardous air pollutants, this facility will be considered an area source.

There are no MACT rules that apply to polyethylene foam extrusion activities that occur at area sources. Therefore, this rule will not apply to this facility.

5. Facility-Wide Emissions

According to the most recent inspection report for the Conover facility (June 4, 2019 by Karyn Barksdale), the Conover facility operated seven extrusion lines for 24 hours a day, 5 days per week. The Conover facility emitted 301.21 tons of VOC in CY2018. No other criteria or hazardous pollutants were reported for this calendar year. Based on an email from Steven Hannah regarding the initial application for this facility, HSM expected VOC emissions to increase linearly based on the addition of two new extrusion lines. Therefore, the potential uncontrolled emissions of VOC from this facility can be estimated as:

$$\left(301.21 \frac{\text{tons}}{\text{year}}\right) \times \left(\frac{9 \text{ extruders (this facility)}}{7 \text{ extruders (old facility)}}\right) \times \left(\frac{7 \text{ days per week}}{5 \text{ days per week (old facility)}}\right) = 542.18 \frac{\text{tons}}{\text{year}}$$

The facility is not expected to emit any other criteria or hazardous air pollutants.

6. Changes to the Existing Permit

Page No.*	Section*	Description of Changes
Throughout	Throughout	<ul style="list-style-type: none"> Changed formatting to reflect the 1st-time Title V permit Updated dates and permit numbers Removed specific conditions that reference rules already included in the Title V General Conditions (e.g. 02D .0535 and 02D .0540)
8	2.2 A.3	<ul style="list-style-type: none"> Specified testing due date based on the extension granted by SSCB. Also noted that DAQ may further specify a later due date. Added a requirement to submit a permit application to incorporate the results of the required emission testing. Required calculating and recording the rolling 12-month total VOC emissions.
11	3.	<ul style="list-style-type: none"> Added Title V General Conditions (version 5.5)

* This refers to the current permit unless otherwise stated.

7. Public Notice and EPA Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 02Q .0521 above.

8. Other Regulatory Concerns

- This facility was most recently inspected by Jim Vanwormer on April 15, 2020. HSM appeared to be in compliance with the existing permit at that time.
- No application fee, zoning determination, or Professional Engineer's Seal were required for this application.
- This facility has not been issued any Notices of Violation.

9. Recommendations

Issue permit 10621T01.

Attachment 1 to Review of Application 1800589.20A
Hickory Springs Manufacturing Company – PTI

Comments Received on Initial Draft of Air Quality Permit 10621T01

- Mark Cuilla, by email on October 29, 2020

1. The email pointed out typos in the draft permit and application review.

Response: The indicated issues have been corrected.

2. Should the permit require monitoring/recordkeeping/reporting for PM emissions from the printers and extruders?

Response: These sources are not expected to produce any PM emissions, so MRR for PM from these sources seems redundant to me.